

What is claimed is:

1. A method of establishing communications between a first station and a second station in a wireless local area network using a direct link protocol, comprising:

determining a first distance between the first station and the second station;

5 determining a second distance between the first station and an access point in the wireless local area network;

comparing the first distance to the second distance; and

establishing direct link protocol communications between the first station and the second station if the first distance is less than the second distance.

10 2. The method of Claim 1, further comprising establishing direct link protocol communications between the first station and the second station if the first distance is less than a predetermined multiple of the second distance.

3. The method of Claim 2, wherein the predetermined multiple is two.

15 4. The method of Claim 1, wherein the access point in the wireless local area network compares the first distance to the second distance.

5. The method of Claim 4, further comprising transmitting the location of the first station to the access point in the wireless local area network and transmitting the location of the second station to the access point in the wireless local area network.

20 6. The method of Claim 5, wherein the location of the first station and the location of the second station are periodically transmitted to the access point in the wireless local area network.

25 7. The method of Claim 5, wherein the location of the first station and the location of the second station are each transmitted to the access point in the wireless local area network in response to a polling request sent by the access point in the wireless local area network.

8. The method of Claim 1, wherein the first station compares the first distance to the second distance.

9. The method of Claim 8, further comprising:

receiving at the first station a response frame from the access point in the wireless local area network; and

extracting the location of the second station and the location of the access point in the wireless local area network from the response frame; and

5 wherein the first distance and the second distance are determined based on the extracted location information.

10. The method of Claim 9, wherein a body of the response frame includes:
a field for storing the location of the second station; and
a field for storing the location of the access point in the wireless local area network.

10 11. The method of Claim 1, wherein the first distance is determined based on a location of the first station and a location of the second station, and wherein the second distance is determined based on a location of the first station and a location of the wireless access point in the local area network.

12. The method of Claim 11, further comprising:
15 transmitting a request frame from the first station to the second station via the access point in the wireless network; and
transmitting a location of the second station and a location of the access point in the wireless network to the first station in a response to the request frame.

13. The method of Claim 11, wherein the location of the first station and the
20 location of the second station are determined using a global positioning system receiver.

14. The method of Claim 5, wherein the location of the first station and the location of the second station that are transmitted to the access point are represented in spatial coordinates.

15. A computer-readable medium having computer-executable instructions for
25 performing the steps recited in Claim 1.

16. A method of determining whether to route communications between a first station and a second station in a wireless local area network using a direct link protocol, comprising:

determining a distance between the first station and the second station;

determining a distance between the first station and an access point in the wireless area network; and

determining whether to route communications between the first station and the second station in the wireless local area network using the direct link protocol based at least in part on the determined distances.

17. The method of Claim 16, wherein the distance between the first station and the second station and the distance between the first station and the access point in the wireless area network are determined based on a locational coordinates of the first station, the second station and the access point in the wireless local area network.

18. The method of Claim 17, wherein at least the first station and the second station include a global positioning system receiver for determining the locational coordinates of the respective first station and second station.

19. The method of Claim 16, wherein determining whether to route communications between the first station and the second station in the wireless local area network using the direct link protocol based on the results of the comparison comprises determining that direct link protocol communications will be established between the first station and the second station if the distance between the first station and the second station is less than the distance between the first station and the access point in the wireless area network.

20. The method of Claim 18, wherein determining whether to route communications between the first station and the second station in the wireless local area network using the direct link protocol based at least in part on the determined distances comprises determining that direct link protocol communications will be established between the first station and the second station if the distance between the first station and the second station is less than a predetermined multiple of the distance between the first station and the access point in the wireless area network.

21. The method of Claim 20, wherein the predetermined multiple is two.

22. The method of Claim 16, further comprising:
transmitting to the second station a request from the first station to establish communications with the second station;

transmitting to the first station a location of the second station and a location of the access point in the wireless network in a response to the request from the first station to establish communications with the second station;

extracting the location of the second station and the location of the access point in the wireless local area network from the response; and

determining the distance between the first station and the second station and the distance between the first station and the access point in the wireless area network based on the extracted location information.

23. The method of Claim 16, further comprising:

storing at the access point in the wireless network the location of the first station and the location of the second station;

receiving at the access point in the wireless network a request from the first station to establish communications with the second station;

determining the distance between the first station and the second station and the distance between the first station and the access point in the wireless area network based on the stored locations of the first station and the second station.

24. A wireless local area network, comprising:

an access point; and

a plurality of wireless local area network stations, each station including:

a location tracking device;

a processor that determines a distance between the station and a second of the stations in the wireless local area network and a distance between the station and the access point, wherein the processor determines based on the respective distances between the station and the second station in the wireless local area network and between the station and the access point whether to establish direct link protocol communications between the station and the second station in the wireless local area network.

25. The wireless local area network of Claim 24, wherein the location tracking device comprises a global positioning system receiver.

26. The wireless local area network of Claim 25, wherein processor elects to establish direct link protocol communications between the station and the second station in

the wireless network if the distance between the station and the second station in the wireless local area network is less than the distance between the station and the access point.

27. The wireless local area network of Claim 25, wherein the processor elects to establish direct link protocol communications between the station and the second station in the wireless network if the distance between the station and the second station in the wireless local area network is less than a predetermined multiple of the distance between the station and the access point.

28. A method of determining whether to route communications between a first station and a second station in a wireless local area network using a direct link protocol, comprising:

determining a received signal strength of a signal sent between the first station and the second station and a received signal strength of a signal sent from the first station to the access point in the wireless area network; and

determining whether to route communications between the first station and the second station in the wireless local area network using the direct link protocol based at least in part on the determined received signal strengths.

29. The method of Claim 28, further comprising determining the distance between the first station and the second station and the distance between the first station and the access point in the wireless area network, and wherein the determination whether to route communications between the first station and the second station in the wireless local area network using the direct link protocol is further based on the determined distances.

30. The method of Claim 28, wherein the step of determining whether to route communications between the first station and the second station in the wireless local area network using the direct link protocol based at least in part on the determined distances comprises determining whether to route communications between the first station and the second station in the wireless local area network using the direct link protocol based on both the relative magnitude of the determined distances and the absolute distance between the first station and the second station.